

Low-Cost and Light-Weight Transpiration-Cooled Thrust Chambers, Phase I

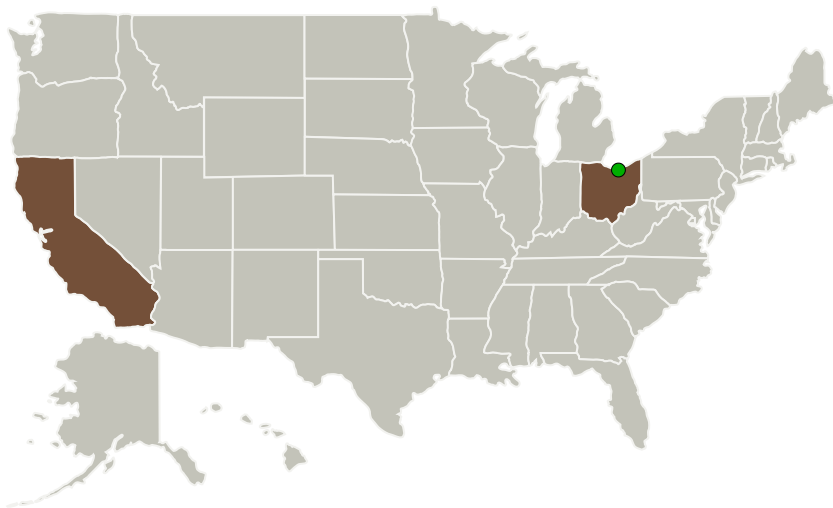
Completed Technology Project (2011 - 2011)




Project Introduction

The proposed effort aims to evaluate the feasibility of using transpiration-cooled Titanium as the primary material in small-scale thrust chambers for in-space chemical propulsion applications in the 25-5,000lbf thrust class. This approach would allow for bipropellant thrust chambers that are almost 10-times lighter and significantly less expensive than current state-of-the-art radiatively-cooled refractory metal (e.g. Iridium / Rhenium) systems. In addition, since they are actively cooled, the proposed approach will allow for higher chamber pressures, thereby providing further reductions in thruster size and mass for performance improvement.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Ventions, LLC	Lead Organization	Industry	San Francisco, California
 Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations

California	Ohio
------------	------



Low-Cost and Light-Weight Transpiration-Cooled Thrust Chambers, Phase I

Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3
Target Destinations	3

Low-Cost and Light-Weight Transpiration-Cooled Thrust Chambers, Phase I

Completed Technology Project (2011 - 2011)



Project Transitions



February 2011: Project Start



September 2011: Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/138682>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission
Directorate (STMD)

Lead Organization:

Ventions, LLC

Responsible Program:

Small Business Innovation
Research/Small Business Tech
Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

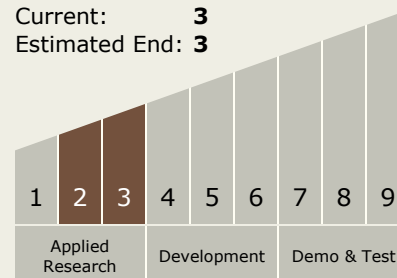
Carlos Torrez

Principal Investigator:

Adam London

Technology Maturity (TRL)

Start: 2
Current: 3
Estimated End: 3



Low-Cost and Light-Weight Transpiration-Cooled Thrust Chambers, Phase I

Completed Technology Project (2011 - 2011)



Technology Areas

Primary:

- TX01 Propulsion Systems
 - └ TX01.1 Chemical Space Propulsion
 - └ TX01.1.3 Cryogenic

Target Destinations

The Sun, Earth, The Moon,
Mars, Others Inside the Solar
System, Outside the Solar
System